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09/841,504	04/24/2001	Gene E. Lightner		5672

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Federal Way, WA 98023

EXAMINER

LANGEL, WAYNE A

ART UNIT	PAPER NUMBER
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1754

DATE MAILED: 05/21/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

841504

Applicant(s)

Lightner

Examiner

Langel

Group Art Unit

1754

— The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address —

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- ☐ Responsive to communication(s) filed on _____
- ☐ This action is FINAL.
- ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 1-15 is/are pending in the application.
- ☐ Of the above claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 1-15 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement

Application Papers

- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).
- ☐ All ☐ Some* ☐ None of the:
 - ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____
 - ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____

Attachment(s)

- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 2
- ☒ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Draftperson's Patent Drawing Review, PTO-948
- ☐ Interview Summary, PTO-413
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Other _____

Office Action Summary

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The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamaguchi et al. in view of Scott, further in view of Takeuchi et al. Yamaguchi et al. disclose a process for steam reforming a pyrolysis gas containing hydrogen, carbon monoxide and dioxide, methane and other hydrocarbons by steam reforming, carbon monoxide conversion and/or methanation. (See the Abstract and column 8, lines 33-68.) The differences between the process disclosed by Yamaguchi et al., and that recited in applicant's claims, are that Yamaguchi et al. do not specifically disclose that the carbon monoxide conversion should constitute a water gas shift reaction, or that a flue gas should be provided by means of combustion of a biomass. It would be prima facie obvious from Scott to employ a water gas shift reaction for the carbon monoxide conversion step of Yamaguchi et al., since Scott discloses a process for hydrogasification of biomass to produce high yields of methane, wherein the gas leaving the gasifier is

subjected to steam reforming and then shift reaction to produce hydrogen. (See the Abstract and Figure 1.) It would be further obvious from Takeuchi et al. to provide a flue gas by means of combustion of a biomass, since Takeuchi et al. disclose a process for gasifying waste containing organic substances which may be combusted or gasified by means of partial oxidation in the presence of air or oxygen and steam. The process provides for partial oxidation at about 700 to about 900°C and discontinuing the steam supply while continuing only air or oxygen supplied to combust the remaining combustibles leaving carbon as their major component. (See the Abstract and column 4, line 5 - column 6, line 8 of Takeuchi et al.) It is noted that applicant's claims do not require that the flue gas from the combustion step be passed to the steam reforming step, as shown in Figure 1 of the drawings and as described in the specification.

Claims 1-15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Scott in view of Takeuchi et al. Scott and Takeuchi et al. are relied upon as discussed hereinbefore. It would be prima facie obvious from Takeuchi et al. to provide a flue gas by means of combustion of a biomass, since Takeuchi et al. disclose a process for gasifying waste containing organic substances by partial oxidation followed by combustion of the remaining combustibles. It is noted that applicant's claims do not require that the flue gas resulting from the combustion of

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the remaining combustibles be passed to the steam reforming zone.

Claims 1-15 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is indefinite as to whether the gas containing water vapor, hydrocarbons, and carbon monoxide which is subjected to the catalyst for steam reforming, be the same gas resulting from the step of "providing a gas containing water vapor and carbon monoxide derived from a biomass". It is also indefinite as to what the relationship of the step of "providing a flue gas by means of combustion of a biomass" as to the rest of the process, since the claims do not recite any use or function for the flue gas. In claim 12, the recitation of "including an individual or combination of these materials thereof" is ungrammatical and therefore indefinite.

Claims 1-4 and 9-15 are rejected under 35 U.S.C. § 112, first paragraph, as based on a disclosure which is not enabling. The steps of obtaining the gas containing water vapor, hydrocarbon, and carbon monoxide by partial oxidation of a biomass to create solid remains, and the step of subjecting such remains to combustion by air to create a flue gas and a residue containing inorganic solids are critical or essential to the practice of the invention, but not included in the claim(s) is

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not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976).

Cahn et al. is made of record for disclosing the production of synthetic natural gas by concurrently introducing carbonaceous material into a gasification zone, and passing sequentially the synthesis gas thus formed through a water gas shift conversion zone.

Yokoyama et al. is made of record for disclosing a method for producing hydrogen from biomass.

Fujimura et al. '224 and Fujimura et al. '858 are made of record for disclosing methods for treating wastes by gasification, wherein carbon monoxide in the synthesis gas formed during the gasification step is converted into carbon dioxide and hydrogen.

Michel-Kim is made of record for disclosing a three stage process for producing producer gas from combustible waste products.

White '677, White '227 and White '116 are made of record for disclosing methods for producing synthesis gas by feeding an organic feed material and steam to a reaction zone, contacting the steam with the organic feed material in the reaction zone, followed by the water gas shift reaction. The feed material is solid waste material, most preferably solid municipal waste.

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This application apparently discloses allowable subject matter. Claim 1 should be amended by incorporating the limitations of claims 4 and 5 and by providing definite language for the claim, which would include the steps of passing the gas containing water vapor, hydrocarbons, and carbon monoxide obtained from partial oxidation of a biomass to create solid remains, as well as the flue gas obtained by subjecting the residue containing inorganic solids to combustion by air, to the steam reforming step, as shown in Figure 1 and as described in the specification.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wayne A. Langel whose telephone number is (703) 308-0248. The examiner can normally be reached on Monday through Friday from 8 A.M. to 3:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman, can be reached on (703) 308-3837. The fax phone number for this Group is (703) 305-7718.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-2351.

WAL:cdc
May 15, 2003

Wayne A. Langel
WAYNE A. LANGEL
PRIMARY EXAMINER